

## On the True Nature of *Schizotaenia*, with Notes on Contingent Matters <sup>1</sup> (Chilopoda: Geophilomorpha: Chilenophilidae)

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In April, 1896 (p. 73) O. F. Cook proposed a new Liberian genus and species, *Schizotaenia prognatha*, but failed to characterize it in any manner; the new name was therefore a *nomen nudum*. His simultaneous designation of *prognatha* as type-species of *Schizotaenia* has no validity either, the names having been still-born. Sometime after July 21st of that year Fascicle VIII of *Brandtia* appeared, and in it he did describe *Schizotaenia* validly (p. 35, key), referring seven species to it (p. 38): *prognatha*, sp.n., *quadrisulcata* (Porath), *suppar*, sp.n., *vara*, sp.n., *aequalis* (Porath), *porosa* (Porath), *unquiculata* (Porath). Since he presented characterizations for the new genus and species, they must be considered to have been proposed validly in *Brandtia* and not in the earlier publication. In *Brandtia*, however, Cook failed to designate a type-species.

Subsequently, ignoring the original content of the genus, at different times Silvestri, Verhoeff, and Attems referred other species to *Schizotaenia*. Silvestri began this trend, most notably in his important work on the Chilean fauna in 1905, with his inclusion within *Schizotaenia* of *alacer* (Pocock) and *psilopa* (Attems); as we shall see, neither is congeneric with *prognatha*. In the 1905 publication Silvestri did not fix a type-species for *Schizotaenia*. Finally, he cited Attems' *magellanica* as a junior synonym of *alacer*, a synonymy which Attems declined to accept in his 1929 monograph of the Geophilomorpha. At that time Attems summarized the genus, listing the following as being

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valid and congeneric species within it: *Scolioplanes magellanicus* Attems, 1897, *Geophilus alacer* Pocock, 1891, *Schendyla psilopa* Attems, 1897, *Geophilus schauinslandi* Attems, 1903, *Mesoleptodon laetus* Chamberlin, 1920, and *Philosogus oligus* Chamberlin 1920. In addition he stated that *Schizotaenia magellanica* was the type-species of the genus. Implicit in all of this was Attems' view that *Schizotaenia* was a member of the Pachymeriinae and morphologically very similar to *Eurytion* and *Pachymerinus*.

From the foregoing account it must be clear that *magellanica* was never available as a possible type-species of *Schizotaenia* because it was not among the species originally included in the genus. The type-species of a genus is a name on paper; it is not a material object. Furthermore, the type-species of a genus can only be one of the names referred to the genus at the time of its valid proposal. Therefore Attems' selection of *magellanica* as type-species of *Schizotaenia* is not admissible.

In his 1962 work on the Chilean Chilopoda Chamberlin legitimately fixed the type-species of *Schizotaenia*; by his subsequent designation (p. 4) it is *S. prognatha* Cook. His action is in accord with the expressed wishes of Dr. Cook, but in addition it clarifies the suprageneric position of the genus, locating it within the Chilenophilinae<sup>2</sup> and removing it from the Pachymeriinae, where it was clearly misplaced. *Schizotaenia* is closely similar to the chilenophilines *Ribautia* and *Polygonarea* but not at all similar to *Eurytion* and *Pachymerinus*, which are good representative pachymeriines.

Chamberlin's action in 1962 seemed to him to leave the species previously referred by Attems to *Schizotaenia* without a generic name. Accordingly he proposed a new one, *Cryotion*, and designated *magellanicus* as its type-species. At the same time he excluded two other available and supposedly suitable generic names, *Philosogus* Chamberlin, 1920, and *Mesoleptodon* Chamberlin, 1920, by attempting to show that they are generically different from *Cryotion* and *Eurytion*. Their type-species are

<sup>2</sup> I am following Chamberlin and not Attems here. Attems' Chilenophilinae + Pachymeriinae = Chamberlin's Chilenophilidae, with two subfamilies, Chilenophilinae and Pachymeriinae.

indeed not congeneric with *magellanicus*. In 1936 (p. 58) Archey showed that *laetus*, the type-species of *Mesoleptodon*, properly belongs to *Maoriella* Attems, 1903, a distinct and valid generic entity. I have examined the types and concur with Archey. I have also examined the type of *Philosogus oligus* Chamberlin, 1920, type-species of its genus, and find it to be conspecific with *Zelanion antipodus* (Hutton, 1877), whose type I have seen in the British Museum (New Synonymy). It follows that *Philosogus* Chamberlin, 1920, is the junior subjective synonym of *Zelanion* Chamberlin, 1920.

When Chamberlin proposed *Cryotion* for the reception of *magellanicus* and congeners, he overlooked an earlier available generic name, *Schendyloides* Attems, 1897, whose type-species is *Schendyla* (*Schendyloides*) *psilopa* Attems, 1897 (monobasic). I have examined the types of *magellanicus* at Hamburg, of *psilopa* at Vienna, and of *alacer* at London, from which I conclude the following: (1) *alacer* is the senior synonym of *magellanicus*, as Silvestri correctly guessed. (2) My lectotype of *psilopa* is congeneric but not conspecific with *alacer*. (3) Therefore, since *magellanicus* (= *alacer*) is the type-species of *Cryotion*, and since *psilopa* (lectotype) is the type-species of *Schendyloides*, and since the two type-species are congeneric, then it follows that *Schendyloides* Attems, 1897, is the subjective senior synonym of *Cryotion* Chamberlin, 1962 (New Synonymy). The fact that *Schendyloides* is valid, being founded upon *Schendyla*, the type-genus of an entirely different family, is unfortunate, but it has of course no bearing upon the selection or rejection of *Schendyloides* as a generic name within Chilenophilidae.

This, then, clarifies the suprageneric positions, type-species, and to an extent the zoological contents of *Schizotaenia* and *Schendyloides*. Although contributing to the resolution of these problems, the Chamberlin paper of 1962 inadvertently lent a new element of confusion to our understanding of the zoological content of *Schizotaenia* because, as I shall attempt to show now, his redescription of *prognatha*, type-species of *Schizotaenia*, is in error.

Chamberlin's new description of *prognatha* was based upon

certain figures sent to him by Cook: he explains this on page 4. He reproduced some of the Cook figures (Fig. 42-45, Plate VII) but deleted two showing the most posterior body segments.

As Chamberlin supposed, the Cook figures must have been prepared from microscopical preparations, which now cannot be found among the other Cook slides in the collection of the United States National Museum. None the less, we do have 13 complete and 3 fragmentary syntypes in alcohol, all clearly labelled *Schizotaenia prognatha* in Cook's own handwriting. Therefore his composite description (p. 38) must have been made from these as well as from the missing specimen on the slide.

According to Chamberlin's characterization of *prognatha*, the critical generic features are supposed to be as follows (p. 1, key, couplet 3): "Three coxal pores, two large and one small on each side; median piece of labrum with teeth numerous and very fine; both penult and last legs lacking true claws and both with well developed setose pretarsi. . . ." And yet in every one of the Cook syntypes I find the following to be true: (1) Each coxopleuron has only two pores. (2) The ultimate pretarsus is tuberculate and setose. (3) The penult pretarsus is strictly claw-like, not in the slightest tuberculate and setose. It seems clear that in such cases the court of ultimate appeal must always be the type specimens themselves, so that we can only be guided by what Cook's type series shows and not by what he wrote or, in this instance, may have figured in error.

The Cook figures that Chamberlin published agree with the Cook syntypes before me, but in no syntype are there more than two pores per coxopleuron, and in none is the penultimate pretarsus tuberculate. The Cook description was composite; there was no holotype. Therefore, any member of the syntypical series is available as a lectotype, which means that we are not bound to accept as definitive the information recently published by Chamberlin. My firm suspicion is that Cook erred somehow, inadvertently figuring parts of two different species. It seems quite probable that the figure showing a coxopleuron with three pores was made, not from a specimen of *prognatha*, rather from a specimen of *Ribautia vara* or *unguiculata*, or even of

some other species of *Ribautia*, a genus close to *Schizotaenia* and well-represented in West Africa.

With respect to the reportedly tuberculate penult pretarsus, only two explanations come to mind. The character is erroneous and does not exist: Possibly there was some mistake in the labelling of figures. If that is not the case, then it is the hallmark of some as yet unknown genus and species. Whatever the explanation is, the original syntypes of Cook do not exhibit this feature.

Consequently I am unable to agree with Chamberlin in his contention that the western African *Schizotaenia* Cook, 1896, is generically different from the Brazilian *Schizonampha* Chamberlin, 1914. The type-species of the two are quite clearly congeneric, and therefore *Schizotaenia* is the senior subjective synonym of *Schizonampha* (New Synonymy). Furthermore, on the basis of the original description of *manni* Chamberlin, 1914 (p. 214), it seems impossible to distinguish between it and *prognatha* at the species level. However, the holotype of *manni* cannot be located, and in this case I would not venture to synonymize the two species on the basis of the original description alone.

The presence of this genus in western Africa and eastern South America is not surprising. It is known now that a number of chilopod genera inhabit western Africa and the Neotropics. A few probably represent the persisting ends of an ancient continuum, but most, I feel, are to be explained on the basis of rafting across the Atlantic. For a more detailed discussion the reader is referred to Crabill, 1960, pp. 167-170, and Darlington, 1957, pp. 14-20.

#### Diagnosis of *Schizotaenia*

The following diagnostic features taken together will distinguish the genus from all other chilenophilids. First maxillary coxosternal lappets absent; telopodite lappets present. Second maxillae: Coxosternites separated by membranous isthmus, prominent statumina with concursive sutures present; second and third telopodite articles each with a prominent distoectal

process. Prosternum: Pleuroprosternal sutures strictly lateral and complete; pleurograms present, nearly complete. Ventral porefields absent. Each coxopleuron with two homogenous pores. Ultimate leg with two tarsal articles; pretarsus a prominent, setose tubercle.

Redescription of *Schizotactnia prognatha* Cook

Lectotype

Male. Africa, Liberia, Mt. Coffee (ca. 17 miles N.E. of Monrovia, 6° 01' N. Lat., 10° 42' W. Long.); June 1892. U.S.N.M. Myriapod Catalogue: 2934. Myriapod Collection: C-6.

INTRODUCTION. About 9 mm long. With 43 pedal segments. Shape: Uniformly wide over anterior two-thirds of body, thereafter slightly attenuate. Color: Faded in alcohol, sordid brown; in original description Cook says "body whitish, head brown." ANTENNA. Length (in balsam), 1.4 mm. Filiform, only very slightly attenuate distally; articles 2-9 longer than wide, the ultimate equalling the preceding two in length. Articles 1-8 or 9 with longer, sparse setae than those following. Ultimate article on outside half distally with a few robust, inflated setae. CEPHALIC PLATE. Length, 0.46 mm, greatest width, 0.32 mm; width to length = 1:1.42. Shape: Nearly rectangular but sides very slightly excurved, rear and front margins nearly straight. Frontal suture extremely weak, nearly invisible. Prebasal plate entirely covered. CLYPEUS. Paraclypeal complete, strong, over posterior  $\frac{9}{10}$  of their course nearly straight. Clypeus as bounded by these sutures wider than long (= 1:1.6). Clypeal fenestra on anterior edge of plate, very small, vaguely distinguished by finer, more irregular areolation, with 4 inclusive short setae; clypeus otherwise with large areolate figures. Without prelabral plagulae. Setae posterior to fenestra, 1 + 1, 1 + 1; prelabral setal pair absent. LABRUM. Midpiece large, separating sidepieces, not at all overlapped by them, with a few robust, dark teeth. Sidepieces with long hyaline filaments. Fulcra long and very robust. FIRST MAXILLAE. Coxosternum without lappets; each telopodite with a long, scabrous lappet.

**SECOND MAXILLAE.** The two coxosternites joined centrally only by a non-areolate, membranous isthmus, hence, in effect, "separated"; each coxosternite very long; pore aperture open mesally; statumen long and strongly sclerotized, laterally concursive with its full length a prominent suture;<sup>3</sup> without processes at base of telopodite mesally. Telopodite: Each article short and robust, especially the first and third; first article without ventral condyle, dorsal condyle vestigial, with a long, sharp process at distoectal corner; second article with long, sharp process at distoectal corner; pretarsus unguiform, very long and robust, without serrulations. **PROSTERNUM.** Antero-centrally with two distinct denticles. Pleuroprosternal sutures passing forward on lateral margin and reaching anterior margin. Pleurograms present, fine, very strongly digressive from pleuroprosternal sutures, nearly reaching condyles.<sup>4</sup> **PREHENSOR.** Very long and thin. When flexed, surpassing end of 1st antennal article. Trochanteroprefemur: With two prominent, long denticles, the distal one deeply pigmented and triangular; proximal denticles somewhat shorter than the distal, unpigmented. Second and third articles without denticles. Tarsungula: Basally with a long, slightly recurved, deeply pigmented denticle; ungular blade with dorsal and ventral edges perfectly smooth, not serrulate. Poison calyx very small, subcircular in outline, the appendices long and pendent. Poison gland entirely contained within the trochanteroprefemur. **TERGITES.** Basal plate apparently without sulci. Remaining tergites (except the

<sup>3</sup> This suture, which I here term the parastatuminal suture, has been overlooked heretofore. It is a most valuable diagnostic criterion at the generic and even suprageneric levels. It is never present unless a statumen is present, but more significantly, when the statumen is present, the suture may or may not be present, depending upon the genus. For example, *Arctogophilus* has a statumen but no statuminal suture. This is also the case in *Gnathoribautia* and *Lestophilus*. By contrast, both the statumen and its suture are present in *Ribautia*, *Polygonarea*, and *Schizotaenia*.

<sup>4</sup> In his key to the Chilenophilinae Attems (1929, p. 280) is in error when he ascribes pleurograms ("Chitinlinien") to *Ribautia* but not to *Polygonarea* (see couplet 5). They are prominent in both genera and, indeed, are among their chief distinguishing characteristics.

ultimate) bisulcate. LEGS. Sparsely clothed with long, robust setae. Pretarsi: Ungues long, thin, curved on distal half; parungues acicular, very short, approximately equal in length. STERNITES. On anterior two-thirds of body each sternite with a very deep and long midlongitudinal sulcus. Porefields absent; no subsurface glandular formations visible. Carpophagus-structures absent. Subcoxae with distinct subsurface glandular formations discernible, but pores evidently absent. ULTIMATE PEDAL SEGMENT: Pretergite transversely very wide; bilaterally not fissate. Tergite: Anterior width greater than length; sides slightly convergent posteriorly; rear margin truncate. Sternite: Very wide, the width taken at midlength far exceeding length; posterior margin with numerous minute setae, these overlying a densely glandular mass. Coxopleuron: Ventroposteriorly swollen, this area densely setose and housing a densely glandular mass; with two large, concealed pore openings, each supplied by a single, discrete, homogeneous, glandular mass. Leg. Moderately inflated; about  $\frac{1}{4}$  longer than penult; the two tarsal articles equal in length; pretarsus conspicuously tuberculate, long, with adventive filaments. POSTPEDAL SEGMENTS. Male gonopods long and narrow, very weakly bipartite. Anal pores absent.

### The Paralectotypes

The entire syntypical series was collected (we do not know by whom) at Mt. Coffee, or the Muhlenberg Mission in the vicinity of Mt. Coffee, at various times between December, 1891, and March, 1895.

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#### EXPLANATION OF FIGURES

##### *Schizotaenia prognatha* Cook (Lectotype)

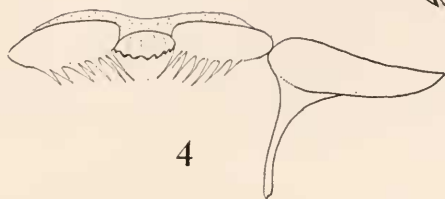
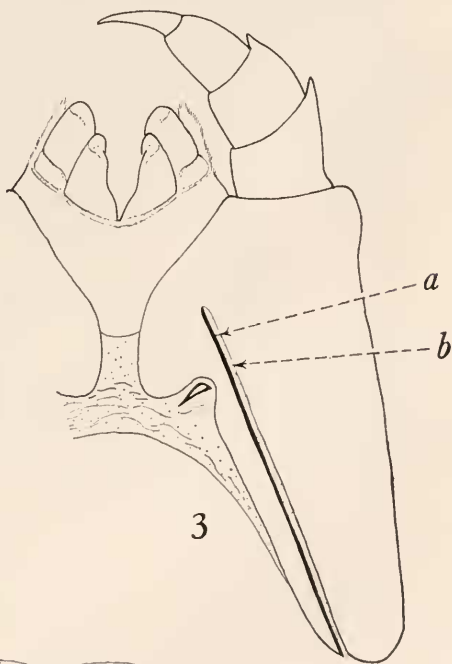
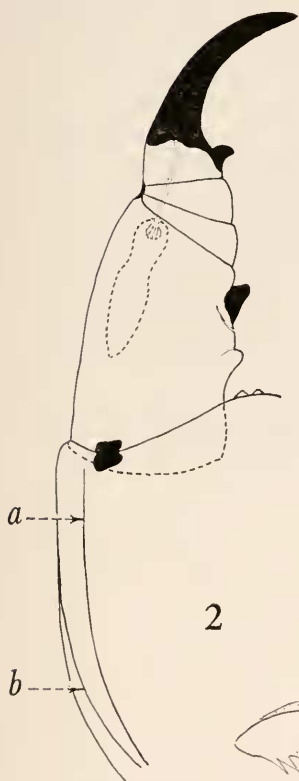
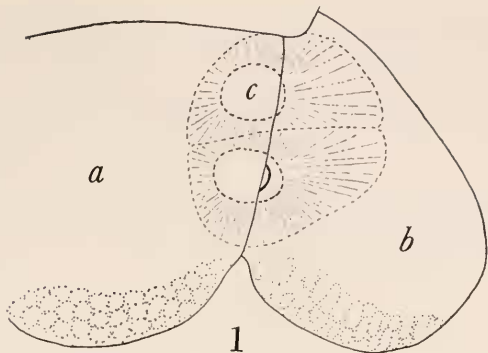
FIG. 1. Ultimate pedal segment; ventral aspect; setae deleted. a = sternite. b = left coxopleuron. c = concealed pore-opening.

FIG. 2. Right prehensor and part of prosternum; ventral aspect; setae deleted. a = pleurogram. b = pleuroprosternal suture.

FIG. 3. First and second maxillae; ventral aspect; setae deleted; membranous, non-areolate areas stippled. a = statumen. b = parastatuminal suture.

FIG. 4. Labrum and left fulcrum.





The paralectotypes agree in all important particulars with the lectotype described. In the females the ultimate legs are swollen nearly as much as those of the males. The female gonopods are flat and leaf-like, centrally united, and unipartite. Pedal segments: Males, 43 in 7 exx., 41 in 4 exx; Female, 43 in 1 ex. In three specimens the rear of the body is detached or missing. The longest of the specimens is about 11 mm. long. All are in poor, some in very bad, condition.

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